

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
7 April 2005 (07.04.2005)

PCT

(10) International Publication Number  
**WO 2005/031702 A1**

(51) International Patent Classification<sup>7</sup>: **G10L 11/00**

(21) International Application Number:  
PCT/BE2004/000116

(22) International Filing Date: 11 August 2004 (11.08.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:  
60/494,375 11 August 2003 (11.08.2003) US  
60/564,054 21 April 2004 (21.04.2004) US

(71) Applicant (for all designated States except US): **FAC-  
ULTÉ POLYTECHNIQUE DE MONS [BE/BE];**  
Boulevard Dolez 31, B-7000 Mons (BE).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **BOZKURT, Baris**

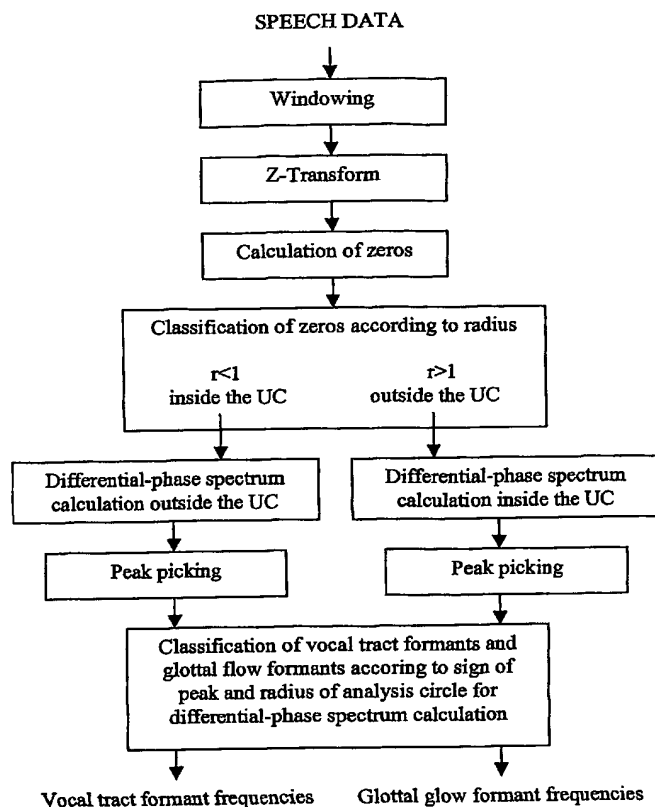
[TR/BE]; Rue Rogier 16/1, B-7000 Mons (BE). **DU-  
TOIT, Thierry [BE/BE];** Rue Odon Rosier 15, B-7332  
Sirault (BE). **D'ALESSANDRO, Christophe [FR/FR];**  
Rue Faubourg Saint Antoine 291, F-75011 Paris (FR).  
**DOVAL, Boris [FR/FR];** Rue Poliveau 20, F-75005 Paris  
(FR).

(74) Agents: **VAN MALDEREN, Joëlle et al.;** Office Van  
Maldereen, Place Reine Fabiola 6/1, B-1083 Brussels (BE).

(81) Designated States (unless otherwise indicated, for every  
kind of national protection available): AE, AG, AL, AM,  
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,  
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,  
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,  
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,  
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,  
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,  
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,  
ZW.

[Continued on next page]

(54) Title: METHOD FOR ESTIMATING RESONANCE FREQUENCIES



(57) Abstract: The present invention is related to a method for estimating from an input signal the resonance frequencies of a system modelled as a source and a filter, comprising the steps of - determining the Z-transform of the input signal, - calculating the differential-phase spectrum of the Z-transformed input signal, whereby the Z-transform is evaluated on a circle centered around the origin of the Z-plane, - detecting the peaks on said differential-phase spectrum, - attributing the peaks to either the source or the filter, - estimating the resonance frequencies from the peaks.



(84) **Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

**Published:**

— *with international search report*